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Infrastructure



# Infrastructure

## A. Water Management Master Plan

With the intent of fully complying with Alexandria's Eco-City Charter, a Water Management Master Plan (WMMP) is required to be provided by the developer, which will coordinate water supply, stormwater, and wastewater systems. The Plan will include systems to reduce potable water use by capturing and reusing rainwater, reducing wastewater generation through water conservation, and exploring reuse of greywater. These, in turn, will serve to reduce development impact on the sewer infrastructure and improve the instream habitat of Four Mile Run, the Potomac River and the Chesapeake Bay.



## B. Stormwater Management

Redevelopment presents an opportunity to coordinate stormwater management on individual blocks and North Potomac Yard simultaneously. To accomplish the innovative stormwater goals envisioned as part of the Plan, the WMMP will incorporate specific water management requirements. Both smaller on-site systems and larger facilities serving multiple blocks will be required to be integrated as part of the WMMP. The innovative techniques specified will provide enhanced stormwater performance measures that exceed water quality requirements current at the time of development. Individual blocks, for example, should incorporate elements such as green roofs, rain water harvesting, and bioretention areas to reduce the amount of stormwater runoff generated and reuse the remaining stormwater to the greatest extent possible. The harvested rainwater will provide irrigation to adjacent vegetated areas such as on-site landscaping and tree wells located in the public right of way. The WMMP may allow for the possibility of locating limited stormwater management infrastructure in the public realm. Low Impact Design (LID) techniques that require infiltration such as bioretention and pervious surfaces will require special consideration due to low-level soil and groundwater contamination remaining from Potomac Yard's previous use as a railyard. Larger stormwater facilities, such as the stormwater



management pond planned for Crescent Park, will be required to be designed to provide a high level of nutrient removal as well as function as a high quality recreational amenity for residents and visitors and be integrated into the overall design of this urban park.

Since North Potomac Yard is uniquely located at the confluence of Four Mile Run and the Potomac River, the redevelopment is required to support the guidelines set forth in the Four Mile Run Restoration Master Plan while further enhancing protection of the adjacent Resource Protection Areas (RPA). This proposal will reclaim portions of the RPA to improve riparian character and ecological functionality.

### C. Wastewater Management

North Potomac Yard will have a significant impact on the Alexandria Sanitation Authority's (ASA) wastewater collection and treatment systems. As a condition of approval of the Potomac Yard/Potomac Greens CDD, a sanitary sewer line was built from the Potomac Yard development directly to the ASA Advanced Wastewater Treatment (AWT) facility. This Potomac Yard off-site Sanitary Trunk Sewer (PYTS) was required because the City's sanitary sewer collection system did not have sufficient capacity to carry the sanitary flows from development proposed within the CDD. The PYTS was designed to include additional capacity (beyond the anticipated requirement of the CDD at that time) to meet future needs of the City including the diversion of wet weather flows from the Four Mile Run Pump Station, separation of combined sewer system (CSS) flows in the Old Town area, and limited development along the Route 1 corridor.

In the Potomac Yard/Potomac Greens CDD, it was anticipated that the redevelopment of North Potomac Yard would contain up to 600,000 square feet of development. The Plan recommends increasing the permitted amount of development from 600,000 square feet to 7.5 million square feet. The sanitary flows generated from this level of development slightly exceed the remaining unallocated capacity in the PYTS, including what had originally been designed to accommodate future City needs, i.e., separated sanitary flows from CSS area and other future developments.

Based on preliminary analysis, the City's conservative estimates indicate that an assignment of the available capacity will likely lead to surcharged (i.e. an over capacity) condition within the PYTS. The City has evaluated several options for accommodating the additional flows anticipated from North Potomac Yard, which include use of low flow plumbing fixtures and practicing water conservation measures to reduce generation of the municipal wastewater, construction of a separate, parallel sanitary trunk sewer, and possible reuse of greywater. The use of low flow fixtures and water conservation practices are in accordance to the Eco-City Charter adopted by the City of Alexandria. With these water conservation measures, additional conveyance capacity will still be needed to convey the flows from the area to the treatment plant. The applicant will contribute funding toward the required improvements to the infrastructure to provide the necessary conveyance for the 7.5 million square feet in proposed development. In addition to the limited conveyance capacity, the City is evaluating capacity needs at the ASA treatment facility. Based on the most current development projections, sufficient treatment capacity should be available for this development.

### D. Solid Waste Management

In compliance with the City Eco-City Charter, the developer will prepare a solid waste management plan for handling and disposing of solid wastes in an environmentally sustainable manner, which will include a hierarchy of uses: Reduce, Reuse, Recycle Resource Recovery, and Proper Disposal. The Plan shall develop a program to recycle the construction and demolition debris and materials that can be converted into valuable resources that would otherwise become waste.



**Note:**

Specific deadline and submission requirements not specified for recommendations will be determined as part of the rezoning for the subject property.

## INFRASTRUCTURE RECOMMENDATIONS

- 7.1 A Water Management Master Plan (WMMP) is required as part of the rezoning. The WMMP will be updated/amended with each building and/or block to demonstrate compliance with each applicable phase.
- 7.2 Require use of pervious surfaces on sidewalks, driveways, parking areas, and streets to reduce generation of stormwater runoff. Maximize use of rooftop space for other sustainability practices (for example, for open space, community gardens, green roofs, energy generation, etc).
- 7.3 Maximize on-site stormwater reduction and reuse techniques to reduce impact on public stormwater infrastructure.
- 7.4 Remove impervious surfaces within RPAs and revegetate to restore function and quality.
- 7.5 Use harvested rainwater to meet irrigation demand.
- 7.6 Maximize exposure of stormwater management facilities as functional amenities to promote citizen awareness and understanding of stormwater quality issues.
- 7.7 Use water conservation measures to reduce the generation of municipal wastewater and explore reuse of greywater.
- 7.8 Construct additional sanitary sewer conveyance infrastructure and address Chesapeake Bay nutrient treatment needs.
- 7.9 Research and evaluate other pioneering technologies to address the capacity needs.
- 7.10 Develop and launch an education program that will include hierarchy of uses: Reduce, Reuse, Recycle, and Proper Disposal of hazardous wastes.
- 7.11 Develop a recycling program for commercial and multi-family buildings.
- 7.12 Develop a community recycling program.

